

difficult genus. Mr. Maiden has the advantage of the results of the investigations of his predecessors, and he has fully availed himself of it, even to the extent of visiting Europe to study the types of the species described by the earlier botanists. The value of his classification can only be estimated after the practical use of it in the determination of new material. The figures in the parts under review are mostly of leaves attached to a small piece of the axis, detached inflorescences, and mature seed-vessels, the originals of all the figures being carefully recorded.

It may be mentioned, however, that the same author's "Forest Flora of New South Wales," so far as issued, contains figures of thirty-eight species of Eucalyptus, figures of larger branches, in flower and fruit, thus supplementing those of the "Revision." Of the latter, fifty-six plates have been published, illustrating fifty-nine species. Details of the economic value and the popular names are fully given only in the forest flora. The usefulness of Mr. Maiden's important work must remain comparatively limited until its completion; therefore any acceleration in its publication would be welcome. But it is to be feared that the author's arduous duties as director of the Sydney Botanic Garden and State botanist leave him little time for original research. Since the foregoing was written we have heard from the author that he had been laid up for two months and was only slowly recovering from a severe surgical operation.

W. BOTTING HEMSLEY.

AIRMEN AND AVIATION.

The Aeroplane, Past, Present, and Future. By C. Grahame-White and Harry Harper. Pp. xv+319. (London: T. Werner Laurie, 1911.) Price 15s. net.

THIS is one of those books which may be classed as ephemeral—that is to say, it is written for to-day and only for to-day; to-morrow it will be obsolete. The title is misleading, for throughout the book there is no general description of the machine or explanation of the principles of its actions. It is a curious circumstance that, although purporting to be written by a well-known aviator and a journalist who has specialised in the subject, yet out of the fourteen chapters which the book contains no fewer than ten of them are put down to the authorship of other writers.

The three anonymous chapters on "Flights and Records," "The World's Airmen," and "Aeroplane Fatalities" are but amplified lists such as may have been culled from the daily papers, and are already becoming somewhat out-of-date. A short chapter on "The Fascination of Flying" is presumably by Mr. Grahame-White, and gives a pleasant sketch of reminiscences.

Of the other chapters, that by Colonel Capper on "The Aeroplane in Warfare" is probably quite the most important; but this, of course, cannot be more than a series of suggestions. Although not new, it may be of interest to note that Colonel Capper firmly believes that the systematic use of aeroplanes "may revolutionise the tactics of the battlefield," but he

wisely adds that in order to obtain such important results "no haphazard aggregation of individual machines and pilots, on the outbreak of war, can be relied on."

Mr. Howard T. Wright's chapter on "The Power Unit of Aeroplanes" records in simple language many interesting facts concerning engines and propellers. Mr. Henry Farman writes on "The Constructional Future of Aeroplanes," in which he says: "Personally, judging from what I know of the possibilities of the situation, I estimate that the maximum speed which will be reached during the year 1911 will be 150 kilometres an hour." We have not arrived at this yet, but there is time. Mr. Roger Wallace summarises some points on "Aerial Law." The chapter on "Sporting and Commercial Possibilities of the Aeroplane," by Louis Blériot, is somewhat disappointing, as is the "Future of Flying," by Louis Paulhan.

While the book is readable and interesting, it tells us little that is new or really instructive. Throughout it gives one the idea of having been rapidly put together and hurriedly produced, without careful planning or proper supervision. There is a profusion of excellent illustrations from photographs; in fact, there seem almost too many, since some of them, such as that of "Captain Dickson describing an aerial reconnoitring trip," might well have been omitted.

OUR BOOK SHELF.

La Haute-Loire et le Haut-Vivaraïs. Guide du Touriste, du Naturaliste, et de l'Archéologue. By Marcellin Boule. Pp. viii+366. (Paris: Masson et Cie., 1911.) Price 4.50 francs.

IN our own islands we have few guide-books precisely of the type of those edited by M. Boule. Praeger's guide to County Down comes first to mind, a book in which scientific considerations associate themselves with the choice of summer quarters and hotels. M. Boule has had the help of specialists in the description of the flora, commerce, archæology, and inhabitants of the picturesque region of which he treats; but the routes by road or footpath are known to him as a geologist, and he rightly loves the contrasts of "les froides et tristes planezaves" and the "chaudes et riantes vallées vivaraïses." He points out the perfectly preserved craters of the chain of the Velay, piled above a fissure sixty kilometres in length, which broke through an upland of old granite, and the fantastic relics of earlier eruptions, like those on which St. Michel d'Aiguilhe and the high castle of Polignac stand. The country is certainly one for lovers of the unusual and the remote. Roman traditions remained in the municipal government of Le Puy down into the fourteenth century (p. 115), and the struggle of the commonwealth against the prince-bishops, who were supported by the kings of France, was as stubborn as the basaltic theatre in which the tragedy was played.

Le Puy, one of the most romantic towns in Europe, forms the natural centre for the district; but M. Boule guides us into the gorges of the Allier, where the railway forms in places the only foothold, and eastward across the broad volcanic upland, set with columnar "orgues," until we reach at Le Cheylard the rivers running to the Rhone. The upland itself has something fascinating, something not quite realised among the *burrans* of Auvergne. Fay-le-froid, in the grey light of a summer dawn, seems

remote enough from the pulse of France all round it. The author, aided by well-chosen views, shows us how the volcanic masses have controlled the higher features of the landscapes, and how the Loire stream-system has cut through the lava-flows, while, on the side of the Allier, lavas of the same age have descended into a pre-existing waterway (p. 326). Full justice is done to the phonolitic mass of the Mézenc, explored by Faujas de Saint-Fond in the middle of the eighteenth century (p. 294). We miss the name of this great investigator from the bibliography on p. 14, although Scrope's work in 1827 is mentioned. The users of this guide will become such good geologists that they will surely like to turn the pages of Saint-Fond's admirable folio. It may be hoped that M. Boule will send many lovers of unspoiled country to the strange and broken slopes of the Cévennes. "J'ai composé ce guide," he writes, "avec un rare plaisir." He has transferred this pleasure to the reader.

G. A. J. C.

The Pronunciation of English by Foreigners: a Course of Lectures to the Students of Norham Hall on the Physiology of Speech. By Dr. Geo. J. Burch, F.R.S. Pp. x+110. (Oxford: Alden and Co., Ltd.; London: Simpkin, Marshall and Co., Ltd., 1911.) Price 3s. net.

THIS is a delightful book. Works on phonetics are usually dry and uninteresting except to those who are willing to face the technical difficulties of the subject. But Dr. Burch, who is well known in other departments of science, invests the discussion with both wit and humour, while, here and there, he gives an amusing anecdote which is always appropriate and telling. He deals with the difficulties experienced by foreigners in catching the correct pronunciation of some of the sounds of the English language. The book is founded on lectures delivered at Norham Hall, Oxford, to foreign women students, and during the past ten years or so Dr. Burch has kept records of the chief difficulties in the pronunciation of 1305 persons of many different nationalities. He gives an excellent, although a short, account of the general mechanism of speech, and minutely describes the movements necessary for the articulation of the speech sounds of consonants, diphthongs, and vowels. There are also excellent remarks on the breathing apparatus.

It would seem that individuals of different nationalities have different methods of using their nervous and muscular mechanisms for articulate speech, so that if one wishes to reproduce the sound in any given language, one must learn how to train the articulating mechanism so as to obtain the required result. Dr. Burch gives minute directions, and it would seem that his system of teaching the correct tones of English to foreigners has had conspicuous success.

"During these ten years I have been greatly struck by the excellent pronunciation of the majority of those attending these courses. If I could speak those languages with which I am familiar with as good an accent as mine is spoken by them, I should have every reason to be proud. But this excellence has made a severer critic of me." (P. 59.)

Excellent, however, as the description of the movements of the tongue and other organs may be to guide the student in reproducing a given sound, an appeal to the ear is all-important, and those are fortunate who have had the instruction communicated by Dr. Burch's own living voice. We feel sure that if anyone takes up this little book he will not find it dry and wearisome, as its title might indicate. It is full of interesting information supplied by one who is an experienced and versatile teacher.

JOHN G. MCKENDRICK.

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Praxis der Linsenoptik in einfachen Versuchen zur Erläuterung und Prüfung optischer Instrumente.

By Dr. W. Volkmann. Pp. vii+176. (Berlin: Gebrüder Borntraeger, 1910.) Price 3.50 marks.

THIS little book is one of a series composing a "Bibliothek für naturwissenschaftliche Praxis," in which the object of each volume is to provide an introduction to some branch of practical science by means of simple experiments which can be carried out with inexpensive and easily constructed apparatus. The optical equipment here described consists of some half-dozen lenses of different focal lengths, a number of simple wooden stands, some clips and lens-carriers, diaphragms, and screen, with a spirit lamp and strip of gas-mantle to serve as light source. Even with these simple means it is, of course, easy to arrange an interesting and instructive series of experiments to illustrate the properties of lenses and the formation and defects of optical images. With a pinhole and some fine gauze, one can go further, and study effects due to the fact that light is a wave motion. With but little increased expenditure the range of such experiments could readily be extended; but the apparatus described is sufficient to enable practical acquaintance to be made with nearly all the main defects of optical instruments: spherical aberration, astigmatism, coma, distortion, and chromatic aberration can all be examined, and even the theory of resolving power can be studied. The book concludes with chapters on the photographic lens, the magnifying glass, the microscope, and the telescope, in which application is made of the experimental knowledge acquired to the examination of the characteristics of a well-designed optical instrument.

To follow out the course of experiments here suggested would no doubt be for an intelligent lad an excellent introduction to the study of optics, and, though the book is not designed for school use, the German schoolmaster might find in it useful hints in experimental science teaching. For the English reader, however, it has no special interest; it shows no exceptional ingenuity in the devising of experiments, and, from its aim, novelty is not to be expected, nor, perhaps, desired.

Rhododendrons and Azaleas. By Wm. Watson. Pp. xi+116. "Present-day Gardening" Series, edited by R. Hooper Pearson. (London and Edinburgh: T. C. and E. C. Jack, n.d.) Price 1s. 6d. net.

THERE are certain prevailing ideas with regard to the constitution and requirements of rhododendrons which are only partially correct that have tended to restrict their cultivation. Thus the necessity for peat in the soil is an exploded assumption, although the presence of lime must be recognised as an effectual bar to success. Then again the tenderness of many attractive species is only too obvious, but it is fortunately possible to obtain hybrids of a more hardy character. Further, it may be mentioned that no good popular book on rhododendrons is extant; therefore the present work is eminently desirable, and the publishers are fortunate in securing the services of an author who is an ardent enthusiast, and is also thoroughly conversant with the different classes of rhododendrons and their special features. The classification in itself is tolerably complex. Botanists recognise a single genus which includes the true evergreen rhododendrons, a small group of Indian azaleas, also evergreen—comprising *R. indicum* and its allies—and deciduous azaleas or swamp honeysuckles of North America. The true rhododendron species are best developed in China, while Himalayan species, owing their prominence to Sir Joseph Hooker, are a favourite but tender group, and the North American